The Logger's BARK

1916 - Radio club of Tacoma - 2016

February, 2017 Volume 13, Issue 02 © 2017 Radio Club of Tacoma

The President's Corner

Dave W7UUU

Hello fellow RCT members! February might be a short month but the club has no shortage of cool, productive and fun things going on and to report this month. Al Ferguson, N7OMS, back in December proposed an overhaul and spruce up of the HF room and it all came out very nice! Great job, Al & Team. If you haven't had a chance to stop in to see the "Jerry Room" you should make it a point to visit any Saturday morning for Open House and take a peek.

Our property management team has also been hard at work… as Rich points out: "those money-making club member volunteers in the back room (lockup shed) that no one notices" have been making hard decisions on the disposition of valuable club donations of gear. These guys have a tough job, trying to figure out the best ways to make good use of donated ham radio devices.

And as part of their efforts, we're very pleased to report that a beautiful fully-working Yaesu FT-450D transceiver has been added to the Loaner Program for the purpose of lending out to newly-licensed amateurs curious to try HF operation. Oh, you didn't know we had a Loaner Program? You bet we do! We actually have a nice inventory of gear, from HF transceivers to VHF and even things such as an antenna analyzer for working out problems with your antenna system. If you're interested in learning how the Loaner Program works, just show up at the clubhouse most any Saturday from 9:00 to 2:00 and ask any officer to guide you to the Property Management Team in charge of the Loaner Program.

Yearning up upgrade to your General license? This month we're covering that as well. Member Dave Brooks, N7HT, is currently teaching a 9-week course on all of the topics required to know to pass your General. At our February General Club Meeting, the presentation was "Why Upgrade to General?" to coincide with this ongoing class. If anyone reading this who did not attend but would like to see that presentation privately, just email me (W7UUU@W7DK.org) and I can arrange a GoToMeeting session or just meet at a Starbucks and show you all the cool stuff about upgrading over a Latte.

Also last month Rich Patrick KR7W completed a very successful CW Workshop series on Monday nights, exposing new Morse op-

Upcoming Notable Club Activities

2/22, Weds 7:00 PM Clubhouse Activity Night-
Show N Tell Night
2/25, Sat 10:00 AM Clubhouse **Swap Meet** + Clili Dogs
3/1, Weds, 7:00 PM Club Officers Board Meeting
See w7dk.org for more details….
3/7, Tues, 7:00 PM, **VE Testing** at Clubhouse
3/8, Weds, 7:30 PM– **Club Meeting**. See w7dk.org
3/22 Weds, 7:00 PM Clubhouse Activity Night

erators to the start of learning the code, as well as helping those already able to copy to become more proficient. Turnout was very good most nights. Thanks to Rich for putting this together and for the time donated by some of the coaches to help with this workshop. Maybe if interest is still there it can be repeated sometime in 2017. If this is something you had not heard about but would like to participate in just let any officer know and they'll get the word to Rich.

But one of the biggest upcoming things I left for last: Yes, folks, it's that time of year again – the Mike & Key Club 35th Annual Electronics Show & Fleamarket Hamfest, which is an ARRL sanctioned event. As always it will be held at the Western Washington Fairgrounds (Puyallup Fair) Exhibition Hall on Saturday, March 11th with the doors open at 9:00 AM. Ticket sales begin at 8:00 AM. The Radio Club of Tacoma will have a couple of tables of gear for sale on the main floor, with a hospitality table up on the second floor. This is the mother of all PNW hamfests, and if you've not been to the Mike & Key Club hamfest before, you'll be amazed. I haven't missed this event for many years, and I hope to see you all there. You can read more here: www.mikeandkey.org/flea.htm

So yes indeed – not a long month but surely a lot happening at the Radio Club of Tacoma.
73 for now from Dave Ellison W7UUU

Your Club's Property Management Team will be at the Mike and Key Hamfest selling surplus equipment. Stop by their two tables and tell them thanks for being there.

MIKE & KEY AMATEUR RADIO CLUB

ANNOUNCING THE 36th ANNUAL MIKE AND KEY ARC ELECTRONICS SHOW & FLEAMARKET

MARCH 11, 2017 @ 9AM
PAVILION EXHIBITION HALL

WASHINGTON STATE FAIR GROUNDS
110 9th Avenue SW, Puyallup, WA 98371
ADMISSION - $9 (UNDER 16, FREE w/ADULT)
TWO FLOORS WITH 44,000 Sq FEET OF EXHIBITION AREA (>300 tables)
TALKIN 146.82/22 (PL 103.5)
RADIO GEAR * COMPUTERS * CLUB & INFO TABLES * PARTS
SNACK BAR * FREE PARKING * CONSIGNMENT AREA
OVERNIGHT SC/RV Camping Available * LICENSE EXAMS

Table Reservation Information: (253) 631-3756, ddmdink@gmail.com or n7wa@arrl.net
VE Exam Information: (425) 788 0452, ag7t@arrl.net

Great Caesar's Ghost

by Rich KR7W - Bark Editor

This is my 14th out of the 24 newsletter issues I agreed to publish. I am encouraging club members who might want to volunteer to be a newsletter editor for your club to contact the club's management and express your interest.

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What a mess! See page 5 for the rest of the story.

'**Koyaanisqatsi Feedline Out of Balance'-**an article in this issue- from years ago that I've rewritten. ***Koyaanisqatsi*** is a Hopi Indian word that sorta translates to "*Out of Balance*". This article introduces some causes (and fixes) of RFI in ham shacks. I rewrote the article remove the colloquial-ness, improve the PC-ness, and attempt to simplify the techy concepts. I hope that the info imparted makes a difference to some readers. If nothing else… if you see me at the clubhouse– let me know how flawed my thinking is.

Now I am begging… This newsletter is always looking for member's hamshack photos– to make this publication interesting. There's 190 million smart phone users in the USA. All those devices have nice cameras… so come-on… snap an image and email it to me and be rewarded with 200 KB of fame.

Readers– I encourage you to attend the Mike and Key Hamfest on Saturday, March 11. Get out and support your hobby. You might find some item you cant live without, run into an old acquaintance, and make a few new friends. Stop by the Club Property Management's sell table as well as the Club's table upstairs along the north wall. Sit down and fill a chair for a bit to give a fellow club member a break. I'll be there looking for some item I don't know I need… Yet.

Did You Know?

National Electric Code sez: Ham Radio feedline cables must be installed at least 2 feet away from exposed electrical wiring under 250 volts.

If the AC Power wires are over 250 volts then the feedline cables must be at least 10 ft away from the electrical wiring.

The 2 ft and 10 ft distance includes the amount of sway the cable may swing in the wind.

HAMSHACKS OF THE MONTH

BY CONTRIBUTING MEMBERS

This station image (harvested from the world wide web) caught my eye because your Bark Editor has been fond of the Brown Line of Heathkit Amateur equipment. This guy– Mr KC8RP– seems to have it all. Some notable items are:

L center shelf: All Brown Heathkit: SS-9000 + PS-9000 display and power supply. Middle R shelf: HW-5400 with HWA-5400-1 display+power supply. Lower R shelf: Complete HW-9 QRP station. Top shelf middle: HL-2200 2KW Linear Amp w/ SA-2026A Antenna Tuner. Lower L HD-8999 Ultra CW Keyboard. Two sets of electronic keyers. Top shelf– Heathkit test equipment. Too many other items to mention. The computer seys Zenith on it… but we Heathkit aficionados know that Zenith bought out Heathkit in the 1980s– the era of the Brown Rigs.

Send the Bark an image of your ham shack and be famous like Mr KC8RP.

AROUND THE CLUBHOUSE
PAST, PRESENT & FUTURE INFO

Not much extra news for this column to report this month. Prez Dave pretty much wrapped up current happenings in his page 1 column.

Except for… the last 2 or 3 Saturdays there's been a lot of chatting about the $59 BitX 40 meter SSB transceiver that was showcased in the Dec 2016 and Jan 2017 Bark newsletters. 5 club members bought the semi-kit and have been sharing experiences and demoing their little radios on Saturday. I heard one BitX owner say something like, "For $59 it's been worth it to play around with and share the experiences with fellow hams". If this interests you… then click here: http://www.hfsigs.com/

Whilst assisting Al N7OMS with the remodeling of the HF Station Room (aka Jerry Room)… it was easy to see how much coffee had been spilled on the window sill. After removing the sill for refurbishment– the stud work underneath had been saturated with those same coffee spills. To add to that, there is a large stain on the carpet that I don't think a Pro Carpet cleaning service would get out. Broadening my view around the carpet… more stains. The carpet in the Museum is the same way– but not as bad. Take a close look for yourself next time you visit.

Since fixing up the Jerry room… I have become acutely aware that many visitors at the clubhouse do not manage their drinks. On any Saturday after most folks leave (say 2:00 PM) I can spot two or three soda cans– some that are not empty and ready for a klutz like me to knock over on the floor, in a keyboard or into the top of a radio– depending where the careless drinker left the can. The same goes for partially empty coffee cups. An accident ready to happen.

I normally hang out in the Museum entertaining (not comical like Seinfeld) visitors. Since my awakening in the Jerry Room I now challenge folks who bring in drinks. "Hey, I hope you manage that cup and throw it away when finished" I strive to politely do this but sometimes I've been told , "So sorry you are having a bad day". I point to the trash can.

My point is this: Please be aware of your drinks. Pick up after yourselves. Be kind to your clubhouse. Don't be shy– tell that potentially sloppy clubhouse go-er, "Hey you! I hope you don't spill that". Or, "Please throw that away when you are done with it". And while you are at it… take a full trashcan out to the alley and empty it.

Sincerely- Rick K7TW

Time Capsule Project by Adam Barbera W2NCC

Some of you who visited the clubhouse might have noticed an aluminum cylinder with 8 hex bolts securing the lid. This cylinder is part of the time capsule project that I proposed to the board in October of this year. It's been my experience that having a working prototype helps socialize concepts and ideas. These previous experiences are what compelled me to build a simple prototype using the materials I had lying around. The capsule in the clubhouse is a modified 2 meter duplexer with a ¼ aluminum plate welded on for a bottom and bolted on top.

It turns out this idea is not new to the RCT. I learned that Larry Watson KD4VOM was the originator of a time capsule idea back in 2013. Although his approach was much more elaborate, the basic idea of a time capsule is the same. Larry has been providing guidance in developing this concept.

The idea has evolved into having 2 time capsules, one a long-term 100 year and a short-term 25 year capsule. The 100 year time capsule would be sealed and not opened of 100 years. The short-term type capsule would be opened in 25 years the contents reviewed, new materials added, and then resealed for another 25 years. There are a number of advantages to having a 25 year time capsule module. It's an opportunity for tribal knowledge to be shared with the youngest and newest members. There are a number of members that will be here in 25 years and it would be fun to have some of them at the 25 year opening. They could help explain the mindset of the club 25 years prior. We hope a 25 year tradition will begin with the time capsule sealing and be maintained by club members going forward long into the future.

The prototype in the clubhouse is made from aluminum and is bolted on top. There are commercial companies that make time capsules; these time capsules are made from stainless steel and are expensive. Building the time capsules ourselves adds a personal touch and it's the kind of thing we Ham's do. However having a commercially made stainless steel enclosure for the 100 year time capsule would be nice.

All current club members would have an opportunity to participate in the time capsule project. Basic participation would be 1 or 2 paper letters that fit in a #10 size envelope along with a donation to the project. The donation amount would be determined by the individual club member. This could be 1 dollar or $1000. Some club members may want to put more information or documentation into the time capsule so those club members would pay a fee. This fee has not been determined but something like $100 is reasonable.

The idea of a time capsule is to preserve items for others to have in the future therefore no Bio Hazard materials are to be submitted. No wood or plastic products like polyvinylchloride because these materials are chemically unstable, breakdown over time, and will damage items.

I am planning on asking the board to purchase archival paper for club members to hand write or print their letters for the time capsule. Also club members may want to include photographs to better document their message.

The money collected for this project would go to the creation of the time capsules, materials needed to create a secure storage space (mounting brackets) and a door plaque. The surplus money could be set aside for club projects 25 years from now with the club buying bonds or T-Bills.
The sealing ceremony will take place in early 2017. The exact date and location has not been determined. Those of you interested in participating in this project please let me know so we get an idea of volume.

If you have questions, have suggestions or need help getting started please feel free to contact me.

Adam Barbera w2ncc@arrl.net

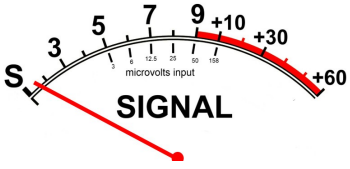
A Flea-power net is developing on 80M

Dateline: Wednesday mornings, at 1530z (0730 PST)

A group of intrepid CW operators has been gathering on 3540 KC to see how much of the Pacific Northwest can be contacted using very low power.

The **PNW QRPp Net**, led by Stewart KE7LKW of White Salmon, WA, invites your participation and encourages the use of 1W (one watt) or less. So far, there have been surprisingly good results, with QRK 4 and 5 signals heard from Bob AD7BP in Edmonds, WA, from George KG7JEB in Gold Hill, southern OR, and from several stations at points between (Tacoma, Trout Lake, White Salmon, Hood River, Corvallis, La Pine).

Among RCT members, John N7TES and Randy WB4SPB have been known to frequent this net, which takes the form of a social roundtable. Participating stations each take the floor for a few comments (signal reports, outside temp, power level, etc.) and then over to the next station in the order prescribed by net control. The sessions last 10 to 30 minutes, depending upon when the deep fading sets in, and, of course, some people have to get to work. Typical operation is at about 15 wpm, but slower speed operators are heartily welcomed and accommodated.



It's Flea Power, but readable.

CLUB MEETING TRAFFIC

PROVIDED BY: MIKE W7MWF, CLUB SECRETARY

Radio Club of Tacoma
Board of Directors Meeting Minutes
January 4, 2017

Meeting called to order at 1900 PST by President Dave Ellison W7UUU.

Officers and Directors Present

President	Dave Ellison W7UUU
Vice President	Mike Mikuchonis W7TXZ
Secretary	Mike Finnie W7MWF
Treasurer	Steve Dightman AF7YD
Board	Bruce Hanson WE7P
Board	Paul Matney W7PFU
Board	Bob Jamison KE7WPK
Board	Red Cranefield WB7EC
Board	Phil Pia K7PIA

A quorum was present. 15 Club members signed the attendance sheet, a copy of which is filed with these minutes.

Welcome New Officers and Directors were welcomed by President Dave.

Silent Key or Illness? Randy reported that Albert N7AEB is in rehab in Spokane following a fall. He hopes to recover satisfactorily to be discharged and return to Tacoma.

Minutes of December 7, 2016 Board Meeting were approved.

Secretary's Report Mike W7MWF reported receipt of usual Correspondence; Insurance Policies; Memberships.
A letter from Pierce County Fire District 23 thanking the club and Bob K7MXE for the donation and installation of surplus equipment was read. Also, the Club received a Radiogram from KB2RTZ wishing the Club holiday greetings. Both of these items are filed with these minutes.

Treasurer's Report Steve AF7YD reported that he had been added as a signer to the bank accounts, and that he and Mike W7XTZ were scheduled to meet on Friday of this week for further transitioning tasks.

Committee / Reports

Membership George K7GRS reported that we ended 2016 with 310 members. 80 members are delinquent; however, 4 renewals were turned in tonight so 76 remain delinquent.

Library Doug AD7AV advises that he will present his annual report and budget request at a subsequent meeting

Training Tech class Jan 7/8; VE Testing Jan 10

Info Tech Randy WB4SPB submitted the IT report indicating nominal operation and performance of Club IT infrastructure. He also notified the Board that he would be managing the w7dk.org website until a replacement can be recruited.

HF Operations W7DK License valid until 10/19/2024. Plans are in the works to develop a status and performance checklist for HF Station Equipment. Operational checks will be undertaken on a monthly basis.

Repeater Ops Mike W7MWF advised he has received no correspondence from WADNR regarding the Crawford Mountain Lease. Also, Mike will verify that WWARA Coordination Certificates are current.

Facilities Mgmt Bruce WE7P advised that he is updating access codes and key issuance. Mike W7MWF advised that he will continue lawn mowing for another year.

Property Mgmt Mike W7MWF reported on the current EBay Team status and upcoming sales events; M&K Tables have been confirmed for both sales and Club PR; a heater purchased for lockup; PMT record keeping is being transitioned to Red WB7EC. PMT submitted a list of surplus property for disposition. Disposition was authorized pending any claims made by Club committees or event organizers. A copy of the list of items approved for disposition is filed with these minutes.

Museum The W7OS License valid until 11/04/2026. Mike W7MWF reported on behalf of Rich KR7W that the restoration of the HX-28 is ongoing. In his report, Rich also outlined possible future projects for the museum.

Weds Workshop The topic for the 4th Wednesday Workshop, January 25th will most likely be the first of several sessions about antenna modeling.

General Meeting "All about Time Capsules and the Radio Club of Time Capsule", to be installed this year, will be presented by Adam Barbera W2NCC.

Unfinished Business Remodel of HF Room A report by Rich KR7W regarding status of HF Room remodel and electrical issues was distributed by Mike W7MWF. No action was taken and Rich's observations will be reviewed. A copy of the report is filed with these minutes.

New Business Payment of regular and recurring expenses payment were authorized to be made by the Treasurer without further Board action

Presidential Appointments – President Dave W7UUU submitted his list of appointments of members for committee chairmanships and for other key positions. A copy of Dave's list is filed with these minutes.

Safe Deposit Box – Mike W7MWF reported that he and Steve AF7YD had inventoried the contents of the safe deposit box, and documents that were expired or for which there was no need for retention were removed for disposal.

There was discussion regarding the status of the loaner program, and PMT was encouraged to update and revitalize the program.

Activity Reports and Discussion Topics

Straight Key Night Randy WB4SPB reported on the success of Straight Key Night. Multiple contacts were made in several different states. 6 pizzas were consumed and a good time was had by all.

FYBO It was noted that there are currently no plans to hold FYBO event this year.

Announcements Adam W2NCC reported that over 400 QSL cards had been mailed in connection with the W7DK/100 Centennial Special Event.

Adjournment The meeting was adjourned at 2047 PST.

Radio Club of Tacoma
General Membership Meeting Minutes
January 11, 2017

Meeting called to order at 1930 PST by President Dave W7UUU at the Pierce County Library Administration Building.

Officers and Directors Present

President	Dave Ellison W7UUU
Vice President	Mike Mikuchonis W7XTZ
Secretary	Mike Finnie W7MWF
Treasurer	Steve Dightman AF7YD
Board	Red Cranefield WB7EC
Board	Phil Pia K7PIA
Board	Paul Matney W7PFU

Pledge of Allegiance led by Mike W7MKE

Welcome and Self-Introductions: Self-introductions were undertaken. Ron Hall former KC7CAW announced his new call K6HSB

New Officers and Board Members were introduced and recognized
The Field Day Pig and Suggestion Box were passed around

President Dave W7UUU announced appointment of committee chairs and other event leaders for 2017. A copy of the appointment list is filed with these minutes

Health and Welfare: Silent Keys Randy WB4SPB reported that Albert Bacon N7AEB in rehab in Spokane after fall last month.

Secretary's Report (W7MWF) Usual stuff, membership renewals, periodicals; QSO Cards (W7DK, W7DK/100 and W7OS. Received insurance policies for Liability and Equipment, invoice for Property received. Mike read a letter of thanks from Pierce County Fire District 23 thanking the Club for a donation and Bob K7MXE for installation of a surplus radio. A copy of the letter is filed with these minutes.

Treasurer's Report (AF7YD) Steve reported that the transition of records and accounts is underway.

Committee / Activity Reports: Membership George K7GRS reported that end-of-year membership stood at 310, up about 7% from the previous year. There are still a number of members who are delinquent but are expected to renew for 2017.

VE Report The VE Report was presented by John AC7WW. A copy of the report is filed with these minutes.

HF Operations Phil K7PIA was recognized as the new HF Stations Manager, and some of the upcoming plans for maintenance schedules were announced.

Repeater Ops Repeaters seem to be functioning OK. Dave W7UUU mentioned the possibility of acquiring new equipment for the 147.280 setup.

Facilities Mgmt It was reported that there are still some maintenance chores on the house and garage that need to be completed when weather permits. Progress of the refurbishment project for the Jerry room was also discussed.

Prop Mgmt Mike W7MWF reported on upcoming sales events, club sales, EBay team status, and . Loaner Program revival.

Straight Key Night Report Randy WB4SPB reported on the success of SKN. Pizzas were devoured, contacts were made, and Bingo was played.

4th Weds Activity Night Randy WB4SPB advised that the topic for the 4WAN on January 25 would likely be the first in the series of Antenna Modeling Techniques

Program: An interesting program "All about Time Capsules and the Radio Club of Time Capsule" (to be installed this year) was presented by Adam W2NCC. Much discussion followed about the suitability of different materials for the capsule, as well as preferences and limitations of the content of the capsule.

Unfinished Business and Announcements

Mineral Winterfest Swap Meet – Friday January 27th at 9am

Freeze Your Buns Off/Bunny Hunt Saturday will not be held this year.

Mike and Key Swap Meet Saturday March 11, 2017 at 9am Puyallup Fairgrounds

Comm Academy 2017 - April 22-23 at South Seattle College - A weekend-long training workshop for Volunteer Emergency Communicators. Registration for one or both days includes lunch. Web page for further details: www.CommAcademy.org. Registration opens Sunday, February 26, 2017.

Tuning and Traffic Randy WB4SPB announced the formation of a regional 1-watt QRP net. The net is held Wednesday mornings at 7:30 on 3.540 megahertz.

Door Prize The door prize recipient was Jim K7SSS

Raffle Prize The raffle prize was won by Warren NG7G

Adjournment Was at 2055 PST

ANNOUNCING THE 36th ANNUAL MIKE AND KEY ARC ELECTRONICS SHOW & FLEAMARKET

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Table Reservation Information: (253) 631-3756, ddmdink@gmail.com or n7wa@arrl.net
VE Exam Information: (425) 788 0452, ag7t@arrl.net

NOTICE NOTICE NOTICE

This Saturday, Feb 25, your radio clubs Property Management Team will be offering club members a 20 percent discount on all equipment items they plan to take to the Mike and Key Swapmeet in March.

Come to the Clubhouse and browse around. Get a bargain before it's taken to Puyallup.

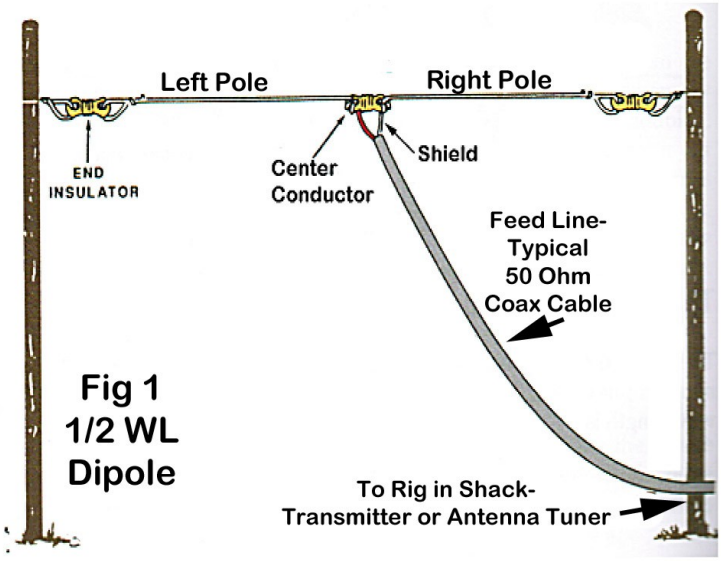
There will be something for everyone. ***But wait! There's more.*** This Saturday is Chili-Dog with Onions for lunch day. Combine that with some special DK church blend coffee– and you will have a meal you'll remember for a long time.

Stop by and practice your Mike n Key hamfest haggling with the PMT folks. Fun for All.

HINTS AND KINKS
CONSTRUCTION & INSTRUCTION
BY READER SUBMISSION

Koyaanisqatsi - Feed Line Out of Balance

by Rich KR7W



The Fig 1 antenna illustration shows the basic Half WL (wavelength) Dipole antenna frequently noted in the Technician and General licensing manuals. This self resonant antenna consists of two elements- the two 'poles' that are connected to the coax feed line center conductor and shield. The opposite end of the coaxial feed line connects to the HF transceiver in the ham shack.

Ideally– when transmitting a signal (CW, SSB, Digital, etc) RF (radio frequency) AC current flows from the transmitter via the coax cable's center conductor into the Left Pole element of the dipole and becomes a radio wave which leaves the antenna. Then the opposite half of RF AC Current flows via the **interior** of the coax shield into the Right Pole and becomes a radio wave. Yes, the *interior* of the shield. This IDEAL RF AC current flow is considered 'differential' current flow– where the current in each opposite path is equal.

The Dipole is a balanced antenna- where the RF current flowing in the antennas two poles and the feedline conductors (Center Conductor + Inner Shield) must be equal for it to effectively radiate according models in many amateur radio publications.

FIG. 2 with bulbs, battery, and extension cable is analogous to an ***ideally*** balanced dipole antenna system as described above. The current in the 2 paths of the circuit is equal or balanced- so both bulbs will radiate light energy equally.

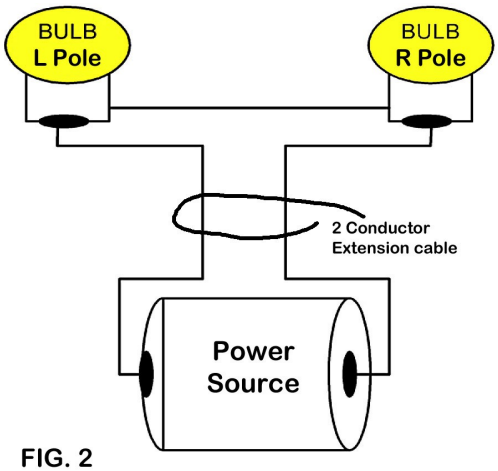
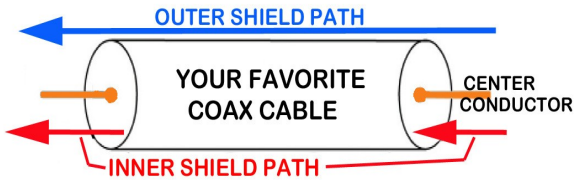


FIG. 2

At this point… it's important to know that as far as RF Energy in Coax Cables is concerned– there are three paths for RF energy to flow as shown in Fig 3. The center conductor as well as two shield paths. In the *IDEAL* dipole antenna system RF Current will flow from the transmitter on the center conductor and due to

the Skin Effect phenomenon, the opposite half of the RF Wave flows from the transmitter on the INNER Shield.

Fig 3. Coax cable - 3 RF Paths



When RF Current flows on the OUTER Shield Path– It's known as Common Mode Current.

Let's say that your dipole is built like the example in Fig 1… At the Feed Point where the coax shield connects to the Right Pole… the RF Current will **divide** and flow down two paths: The Right Pole **and** The OUTER Coax Shield. Half of the energy will take the Right Pole path and the remaining current will take the OUTER Shield Path .

This division of energy is illustrated by Fig 4– the RIGHT Pole and OUTER Shield Bulbs are analogous to Right Pole and coax OUTER Shield of the dipole antenna. Notice that the bulbs that are sharing the two shield paths to the transmitter are not glowing brightly like the LEFT Pole bulb. The OUTER Shield path is robbing power from the RIGHT Pole. The RF Current flow is NOT balanced in the desired paths which results in Common Mode Current flowing along the outer shield.

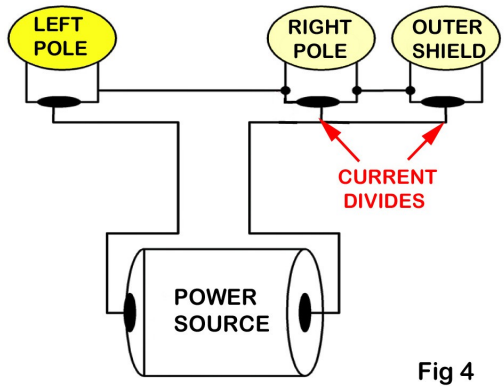


Fig 4

With RF current flowing into the coax OUTER Shield– and RF Energy being RADIATED by said outer shield… it's predictable that a number of undesirable things will occur:

1. The dipoles pattern of radiation is altered since the RF current in the two elements are not equal.

2. The Common Mode Current is **RADIATING RF** down the cable into your hamshack. Antenna theory states that the RF Voltage is highest at the end of the radiating element. If the source of RF Energy is the antennas feedpoint and the radiating element is the coax OUTER Shield... then the end of this element is in your shack. Even if your rig is GND'd, this path contains RF Energy– very high voltage if you run high power. Do PC Speakers in your house emit undesirable garbled sounds? Do Arc Fault protectors in your house AC Panel trip? Does your Home Network Internet freeze up? Or do legacy land line phones ring when you pounce on DX on 20 Meter SSB? No doubt, It's RFI.

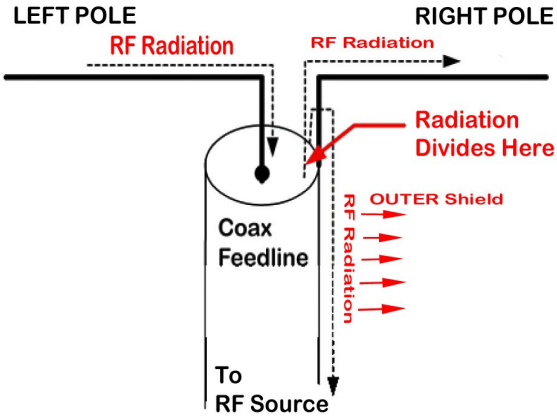


Fig 5 Dipole Antenna with Radiating Shield

3. Another Antenna Theory says that antennas are ***RECIPROCATIVE***– which means that they receive as well as they transmit. If you have RF in your ham shack when you transmit… then you can count on receiving **MM** (man made) RF Noise from inside of your ham shack– even the whole house. Your Internet Router/Cable Modem, el-cheap-o CFL or LED lamps, switching power supply wall wart power modules, and so on. The OUTER Shield of the coax feedline receives the unwanted MM signals and transports them up the feedline to the Feedpoint– where it travels back down the inside of the coax into your rigs receiver to overpower that rare DX or other important signal you want to hear.

How can we prevent Common Mode current flowing along the feedline OUTER Shield and thus radiating unwanted RF Energy and receiving MM Noise?

Just like with Ohms Law in DC circuits– when a large RESITANCE is introduced in the circuit path- the amount of current will be reduced proportional to the amount of resistance added to the circuit. Fig 6 shows a HIGH amount of resistance is placed in series with the OUTER SHIELD bulb path. Now a very low current flows through the OUTER SHIELD BULB circuit which prevents the bulb from radiating any lumens. It's UN-LIT.

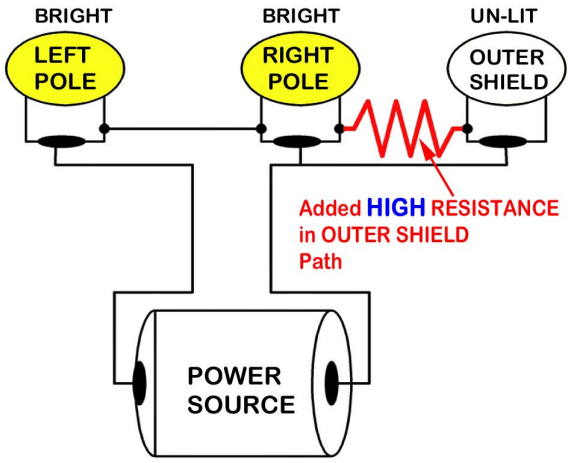


Fig. 6

A HIGH Resistance can be added at the Dipole's Feed Point to eliminate Common Mode Current by including a RFC (**R**adio **F**requency **C**hoke) in the path. A RFC is an inductor that allows DC current to pass through but chokes or suppresses AC current in the Radio Frequency range. The RFC's unit of measurement is the Henry. When RF energy is applied– the choke creates a ***REACTANCE*** which impedes the flow of RF-AC Energy. The unit of reactance is OHMs. Sort of like AC Ohms.

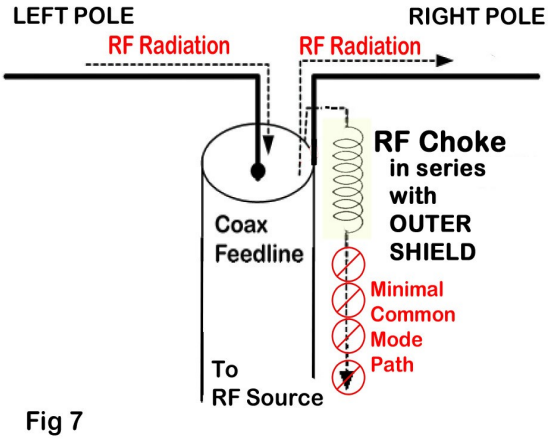


Fig 7

The RF Choke STOPS AC/RF Current flow down the OUTER SHIELD path.

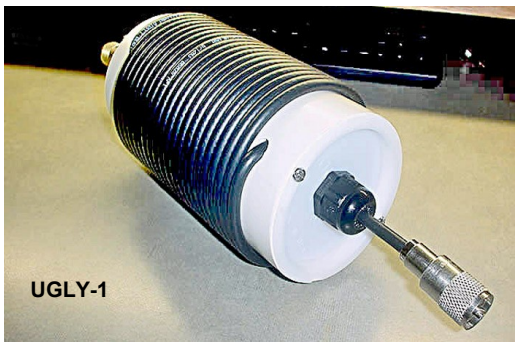
Inserting REACTANCE in series with the OUTER SHIELD at the feed point will act the same as adding the HIGH Resistance between bulbs RIGHT POLE and OUTER SHIELD in Fig 6. Dr. Jerry Sevick W2FMI explains in his book, "Understanding, Building and Using BALUNS and UNUNs"- in order to have the needed choking action to isolate the inner shield from the outer shield at the feed point to minimize Common Mode Current- the chokes minimum amount of reactance needs to be at least 10 times the **Z** (impedance) of the circuit.

A dipoles Z is 72 ohms so therefore the needed reactance to insert must be least 720 ohms at the lowest operating frequency. Amateur Extra students– Check your study guide for this formula: Ex Sub Ell equals two times Pie times Frequency times Ell, or **X_L = 2 pi f L.**

An easy way to add a RF Choke with the needed reactance is to install a **CHOKE BALUN** at the dipoles Feedpoint. Choke BALUNs are made from a length of coax cable wound in a coil to produce enough inductance to create the needed **X_L** reactance in series with the outer shield. It is recommended to uniformly coil the coax cable for highest reactance and ease of managing the device at the antenna feedpoint.

Choke BALUNs for the center of a Dipole Antenna can be purchased or home built.

Homemade option 1: The UGLY BALUN: A length of coax cable uniformly wound on a 3 or 4 inch diameter form. [Note: Your author has used a plastic peanut butter jar] The OUTER Shield becomes a **RFC** [click link] to keep any RF Energy from flowing down the coax feed line. For more UGLY BALUN testimonials, [click link]: **http://www.hamuniverse.com/balun.html.** As seen in these two images– this type of Choke BALUN can be big and bulky and will require support to keep it in place. Note: Next time you are at the Radio Club Clubhouse– take a gander up at the BIG YAGI atop of the tower. Just below the boom is an Ugly Balun similar to image UGLY-2.



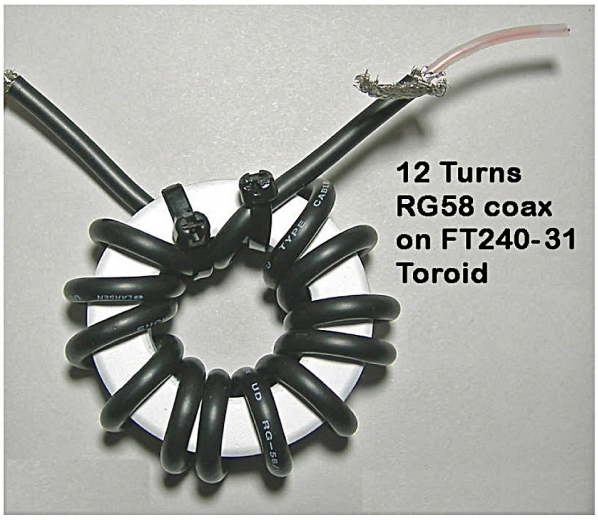
UGLY-1

UGLY-2

Homemade option 2: The Toroid Core Choke: A length of coax cable wound around a Ferrite Toroidal Core. Like the UGLY Balun– the coax OUTER Shield becomes a RFC.

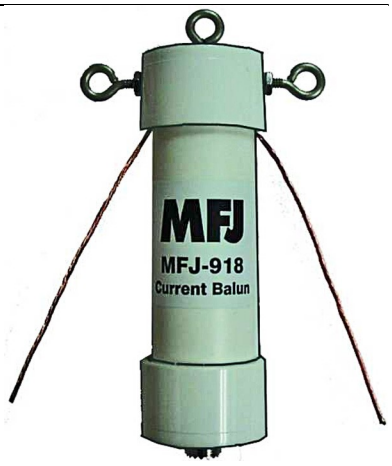
The Toroid Core BALUN is smaller and lighter vs typical UGLY BALUNS and provide more Inductance which creates more REACTANCE to choke out Common Mode Current.

The Toroid Core Balun shown is 2.4 inches in diameter and can easily be fitted at the center of a rope supported Inverted Vee dipole antenna.



Easy to fabricate and much smaller in size– the Toroid Core Balun.

Non-Do It Yourself Choke BALUN: MFJ makes two fairly inexpensive BALUNs for the center of dipole antennas: MFJ-918 for 72 ohm dipoles and MFJ-913 for 200 ohm folded dipoles or other higher impedance antennas. DX Engineering and other ham radio vendors also offer some good choices.



MFJ-918 is highly rated at my favorite Ham Radio Store– [Click Link] Amazon.com.

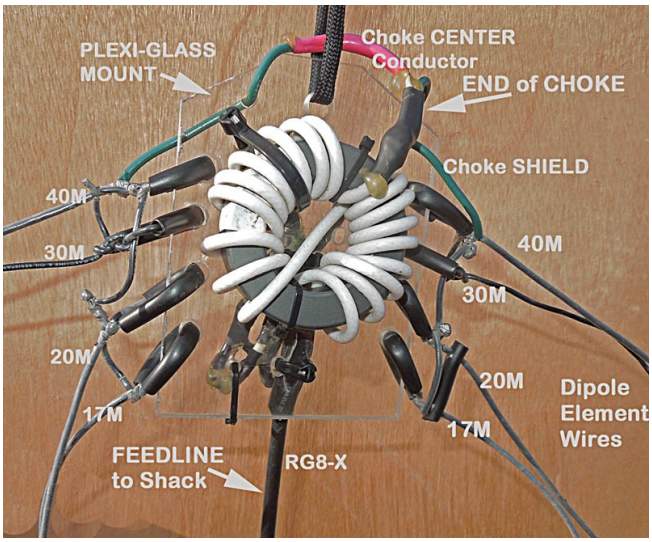
Personal Testimonies:

At the Radio Club Clubhouse– before the UGLY Balun was placed atop the tower at the Big Yagi's feedpoint– this antennas feedline PL-259 connector would spark when removing it from the common coaxial antenna switch. Also this feedline introduced a high amount of noise into the other antennas when connected. Some self proclaimed experts at the Clubhouse think the 85 ft tower is re-radiating a strong AM broadcast station. If that's true– the unwanted RF Energy was appearing as Common Mode Current on the Yagi's feedline shield. With a Big Ugly BALUN in place– now no more coax connector sparking and no extra noise introduced.

At the KR7W shack– Years ago before KR7W became a "Choke BALUN True Believer"- as an experiment, an UGLY BALUN was inserted in the feedline at an outside mounted Icom AH-4 remote antenna tuner. When transmitting there was no more RF Interference in the shack and the 80 Meter receive noise was reduced by 3 S-units. Man Made Noise creeping in?

Again in the KR7W shack– QRP radios (Elecraft KX-3 and older Heathkit HW-7,8,9) were receiving 3 S-units more noise than the big *super-duper* triple conversion Icom transceiver. Why? Dunno but adding a toroid choke BALUN at the antenna feedpoint and an UGLY BALUN just outside of the shack window coax port cleaned it all up.

Questions about this subject? Find me at the RCT Clubhouse most Saturday mornings. Perhaps you will become a True Believer. Regards, Rich-KR7W.



R Image shows the center of KR7W's 4 band Fan Dipole Inverted Vee Antenna– held up by rope from short mast.

Black RG-8X coax from shack splices (unseen on rear of plexi-glass mount) to white RG-58 coax with maximum turns around a 2.4 inch #31 Mix Toroid Core. All splices are sealed in Hot Melt Glue surrounded by Heat Shrink Tubing. Where the 8 dipole legs pass through the plexi-glass– they are protected by thimbles made from 1/4" irrigation tubing. It's not as complicated as it looks in this photo.

It's a great wire antenna for a small sized lot.

TNT THE NEW THING

WHAT'S NEW AND NOTABLE IN HAM RADIO?

CONTRIBUTIONS BY READERS LIKE YOU

The Bayou Jumper, a 40 or 80 Meter Transceiver Kit…
from the Four States QRP Club

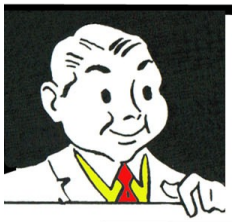
Their website invites us to… "Return with us now to those thrilling days of yesteryear" and build the Bayou Jumper. The name "Bayou Jumper" is a play on "Ocean Hopper", a famous regenerative receiver of a bygone era. It retains that great retro look but with modernized circuitry. With it's distinctive panel and wood box enclosure it pays homage to the famous (Paraset) spy radios of WWII. It is designed for the CW segment of the 40 or 80 meters".

Bayou Jumper– with built in CW Key, just like WW2 original. The front panel is specifically sized to fit into an easy to obtain wooden box from the Hobby Lobby. A great rig for Flea Power Net check ins.

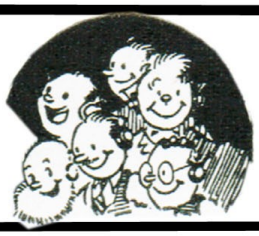
The Bayou Jumper is based on the WW2 Paraset Spy Radio– like this replica.

The kit– which consists of a separate regenerative receiver, a 3 watt crystal controlled transmitter, built in CW Key, and hand switch from Transmit to Receive with a Chicken Head Knob– all just like the WW2 version. The nicely etched front panel is also the rigs circuit board. Looking at the excellently documented Builders Guide– I think that a 'no experience' ham experimenter can easily build this kit. There is a Yahoo Group dedicated to this kit radio for support. Also, it's my experience that the Four States folks are easy to do business with. The cost is $80, you need to provide your own knobs and Crystals. Info is Click HERE:
http://www.4sqrp.com/bayouJumper.php

Hobby Lobby box choices



The Logger's Bark Photo Page



323
ON
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Number 6 on your Feedback card
The SP-1 Transceiver
Build the HF "Spider."
by Mike Agsten WA8TXT
The idea of bringing ham radio along on a wilderness jaunt has strong initial appeal, but when the details are itemized it becomes apparent that sheer weight and volume will displace the truly essential needs like drinking water, food, and raiment.
Let's see . . . I'll take the back-up transceiver, deep-cycle trolling battery, wattmeter, antenna tuner, memory keyer, headphones, wire, coax cable . . . wait a minute! Is this Field Day, or a camping trip?
While I don't mind exposing myself to the great outdoors, even the back-up transceiver has considerable monetary value (and weighs a ton!). No; what I need is a rough-and-ready rig. Something so inexpensive that it could almost be considered a "throwaway."
The "Spider" Solution
The SP-1 Spider is designed to fit this bill. I've nicknamed it after our friend the arachnid because, in ordinary operation, you plug in a crystal and wait, patiently if necessary, for your next victim to arrive on frequency! For
Circuit Description
Photo A. The SP-1 portable CW transceiver.

The Lectrokit model SP-1
Perfect for a Flea Power Net

This KX-2 like rig (ha ha) was offered for sale out of the back of 73 Magazine in January 1993. The SP-1 came in 3 flavors: 80, 40, and 20 Meters. This unit is a 40M model. The 73 Magazine build article reveals that it outputs 1 watt. There's a RIT control that changes DC voltage on a varactor diode to pull the crystal oscillator in the Direct Conversion receiver. This little QRP radio is sort of like a RockMite without a microprocessor IC chip. Back in 1993 it cost $39 postpaid.

Below is a view of Mt Rainier from about 1 mile south of Chinook Pass along the Pacific Crest Trail. The popular PCT destination- Dewey Lake will be about 1.5 miles south of this spot.

It was late October just before heavy snow set in. The bushes were ablaze with orange leaves. Yes, ham radio was involved– as I had my APRS handy-talkie beaconing out my position on 144.390. The Digi-peater called BETHAL located high up in elevation, north of Hiway 12 between Packwood and Natches repeated packets into the Digi-peater at MISION (Ridge) and then into Yakima to enter the APRSIS Network. More INFO: Click **HERE** and **HERE**.

Radio Club of Tacoma

1916 - 2016

100 Years of Service

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Crawford Mountain	147.380 + PL=103.5	(E of Olympia @ 1500 ft ASL)
Central Tacoma:	440.625 + PL=103.5	
North Tacoma:	145.21 – PL=141.3	

www.w7dk.org [LINK] - For the latest and most current information on events and activities, visit the Radio Club of Tacoma Website.